

## CLAIMS

1. Cell culture apparatus comprising a rotor releasably housing a plurality of cell culture vessels / roller bottles and with means provided to allow rotation of the rotor at a controlled speed about a substantially horizontal axis for cell incubation purposes, with further means provided to allow the rotational axis of the said rotor and bottles housed therein to be tilted to a substantially vertical position such that a cap end of the bottles is lowermost, each bottle being provided with a cap equipped with a fluid supply / drain connection arranged at the lowest point of the cap when said bottle is disposed inverted with the cap lowermost, a manifold with one or more sealable external connections and a plurality of connections communicating with the fluid supply / drain connection of each bottle cap, with venting of the gas space within the bottle during fluid transfer being provided by means of a snorkel tube passing upwards through fluid in the inverted position and formed as an internal extension of the bottle cap, said snorkel tube extending into the body of the bottle and having an end opening into the body of the bottle at a position clear of fluid in the bottle in the substantially vertical or horizontal orientations thereof, the said snorkel tube being further provided with micro-porous venting means to atmosphere, the arrangement of the parts being such that fluid transfer into or out of the bottles is accomplished via the said manifold external connection whilst the rotor and bottles are in the substantially vertically inverted position.

2. Cell culture apparatus as claimed in claim 1 in which the snorkel tube is arranged to extend substantially along the central longitudinal axis of the bottle.
3. Cell culture apparatus as claimed in claim 1 in which the snorkel tube within the body is provided with graduations along the length thereof.
4. Cell culture apparatus as claimed in claim 1 in which the end of the snorkel tube opening into the bottle is provided with a fluid trap.
5. Cell culture apparatus as claimed in any one of claims 1 in which a respective clamp or valve is provided in said manifold between the respective bottle cap fluid supply/drain connections.
6. A roller bottle cap adapted to allow fluid transfer into or out of a roller bottle whilst said bottle is inverted substantially vertically, comprising a fluid supply/drain connection arranged at the lowest point of the cap when said bottle is vertically inverted, with venting of the gas space above the fluid during fluid transfer being provided by means of a snorkel tube extending upwards through the fluid, said snorkel tube having an end opening into the body of the bottle at a position clear of the fluid therein.
7. A roller bottle cap as claimed in claim 6 in which the snorkel tube is arranged to extend substantially along the central longitudinal axis of the bottle.
8. A roller bottle cap as claimed in claim 6 in which the snorkel tube within the body is provided with graduations along the length thereof.
9. A roller bottle cap as claimed in claim 6 in which the end of the snorkel tube opening into the bottle is provided with a fluid trap.